

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

JK

January 2, 2007

TO: Internal File

THRU: Wayne Hedberg, Permit Supervisor, Task Manager *DWH*
Karl R. Houskeeper, Environmental Scientist/Engineering, Team Lead *KRH by an*

FROM: David W. Darby, Environmental Scientist/Hydrologist *DW*

RE: Midterm Permit Review, Sunnyside Cogeneration Associates, Star Point Refuse, C/007/0042, Task ID #2620

SUMMARY:

The Division initiated a mid-term review of the Star Point Refuse mining and reclamation plan on August 29, 2006 by informing the Permittee of the midterm review process required under R645-303-211. There have been no major changes to the MRP since mining was approved.

Seven areas of the MRP that have been selected by the Division as part of the evaluation process, these include the following:

1. An AVS check to ensure that Ownership and Control information is current and correct.
2. A review to ensure that the Plan has been updated to reflect changes in the Utah Coal Regulatory Program, which have occurred subsequent to permit approval (One area of emphasis is to ensure compliance with the U. S. Fish and Wildlife Windy Gap Process).
3. A review of the plan to ensure that the requirements of all permit conditions, division orders, notice of violation abatement plans, and permittee-initiated plan changes are appropriately incorporated into the plan document.
4. A review of the applicable portions of the permit to ensure that the plan contains commitments for application of the best technology currently available (BTCA) to prevent additional contributions of suspended solids to stream flows outside of the permit area.

TECHNICAL MEMO

5. A review of the bond to ensure that it is in order and that the cost estimate is accurate and is escalated to the appropriate year dollars.
6. A review of the MPR commitments for the subsidence control/monitoring plans and reporting requirements.
7. The Division may conduct a technical site visit in conjunction with the assigned compliance inspector to document the status and effectiveness of operational, reclamation, and contemporaneous reclamation practices.

This memo will address hydrology issues related to Items 2 and 4.

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

General

The mine life is estimated to be twenty years. Volume of waste to be mined is estimated at 4,710,000 cu yds. Approximately 1,430,000 cu yds will be removed from the site every five years for the first fifteen years. The final five years in the life of the mine will see 410,000 cu yds. moved from the site (see Map 521.100e). Table 523.100a relates the tonnage of coal mine waste to be moved as 200,000 tons/year which equates to 833 tons/day, 104 tons/hour, 15 truck trips/day or two trucks an hour.

Three refuse piles (A, B, and C) are illustrated on Maps 521.100e and 731.120b. Map 521.110d and 110e shows the sequence of mining (Section 521). SCA will use a standard mobile fleet of excavation equipment that may include all or some of the following: dozers, front-end loaders, end-dump trucks, scrapers, backhoes, and support equipment.

The Applicant proposes to use the existing structures and facilities, which were approved for use by PMC. Those structures and facilities are shown on Plate 521.100a, Plate 521.100b

TECHNICAL MEMO

and in section 526 of the PAP. The consultant's report found in Exhibit 624.200a recommended sorting, crushing and blending of the coarse with the fine waste, but the Permittee does not intend to conduct those operations at the site (Division communication with Mr. Rusty Netz, January 6, 2003).

A great amount of refuse material will be removed from the Star Point refuse pile that will be put to a beneficial use. The refuse piles will be reduced over time. There are three stockpiles to be removed. The refuse material will be hauled from on the site to SCA's power cogeneration plant at Sunnyside, Utah, where it will be used as an energy source.

The existing land surface configuration is primarily made up of the man-made coal refuse (pile), and the topography, which existed prior to the pile. There are no prime farmlands associated with the site and no subsidence issues. The size of the refuse pile will be greatly reduced. The exceptionally low hydrologic conductivities of the shale below the refuse pile will prevent downward migration water from the refuse site to the first aquifer below the refuse piles approximately 1,200 feet below the surface.

The applicant plans to conduct UPDES water monitoring in accordance with their permit from the Utah Division of Water Quality. Runoff from the proposed permit site is a result of snowmelt or rainfall only. No springs are identified on the proposed permit area. The adjacent streams are identified as ephemeral. There are no water rights within or adjacent to the proposed permit area that may be impacted by the operations.

The greatest potential impacts from excavation, maintenance, and reclamation of the refuse pile is an increase of sediment in the surface waters downstream from the proposed permit area. SCA proposes to establish the drainage pattern over the regraded surface. All impoundments will be removed during reclamation. Alternative sediment controls will be used during reclamation. All temporary hydrologic structures will be removed and reclaimed according to the reclamation plan.

The operational runoff, conveyance, and sediment control plans were prepared by PMC. The plan includes a complete layout of temporary berms, ditches, and ponds. Throughout the majority of the mine plan area. Diversions and ditches have been designed to safely transmit the precipitation events of a 10-year, 24-hour storm.

Casing and sealing of wells

The casing and sealing of wells is provided in Sections 631 and 748 of the application. The applicant states that all water wells within the permit area will be cased or sealed as approved by the Division to prevent acid or toxic drainage from entering ground or surface water, to minimize disturbance to the hydrologic balance and ensure the safety of people,

TECHNICAL MEMO

livestock, fish, wildlife, and machinery. The applicant has outlined the steps to be taken in reclaiming the well in Section 631. The procedures outlined fulfill the requirements of the regulations.

Groundwater Monitoring

No ground water monitoring will take place. The well is not being used. Since the surface is separated from the aquifer by 1,200 feet of shale, groundwater contamination is not likely. No springs or other groundwater sources exist on the property. The operations will not disturb or disrupt groundwater recharge sources. No monitoring will be required. (A specific requirement for surface mining, R645-731.112, should be addressed in this section.)

Surface Water Monitoring

Surface water monitoring will not be conducted (other than UPDES monitoring), because there are no surface waters in the proposed permit area.

Acid- and Toxic-Forming Materials and Underground Development Waste

The plan indicates in Sections 542.700 and 728.320 that the refuse is potentially acid/toxic forming. Supportive information for this statement is found in Section 624.330. Chemical characteristics of the refuse are found in Section 624.100 and 624.220-230 and Exhibit 542.700a, CPMC 1995 Response to DOGM Midterm Review. Recent research on refuse fuel quality is reported in Exhibit 624.210a, Reserve Assessment of Star Point Coal Refuse Site, prepared by Miltech Energy Services Inc., Ligonier Pennsylvania.

Table 624.100c presents the results of sampling of the surface four feet of the refuse pile in 1987. Locations are shown on Map 222.100a. The results indicate that the refuse is acid forming based upon total sulfur values (average total sulfur acid/base potential of -9.6 Tons/1000 Tons and a range of -36 to positive 37 Tons CaCO₃/1000Ton). When only pyritic sulfur is taken into account, the Acid/Base Potential ranges between -18.8 and 11.1 Tons CaCO₃/1000 Tons. The average pyritic Acid/Base Potential of the refuse reported in Table 624.100c is 0.5 Tons CaCO₃/1000 Tons.

Transfer of Wells

Only one unused well exists in the proposed permit area. Transfer of this well and any other constructed wells will be in accordance with State water law and an approval by the Division and State Engineer.

TECHNICAL MEMO

Discharges Into An Underground Mine

There are no mine openings associated with removal of the coal seam; thus, no discharge into an underground mine.

Gravity Discharges From Underground Mines

Not applicable. No gravity discharges from an underground mine will take place.

Water-Quality Standards And Effluent Limitations

Three (005, 006, and 009) sedimentation ponds will continue to be monitored in accordance with UPDES permits, which outline the State and Federal discharge limitations. Details regarding effluent limitations related to UPDES discharges are found in Exhibit 731.221 and 731.221d. The plans for the sedimentation ponds are prepared by a registered professional engineer and presented in Section 742.212. Sediment will be removed from these ponds on a regular basis when 60 percent of the "sediment capacity" is reached. The Permittee is current in submitting monthly monitoring reports to the Division of Water Quality UPDES program as of November 1, 2006. Data from the reports are submitted to the DOGM Water Quality Database. There have been no reported discharges as far back as January 1981.

Diversions: General

SCA has submitted maps 731.720a and 731.720b that shows the location of diversion structures on the proposed permit area. Diversion ditch and culvert peak flow calculations are provided in Exhibit 732.300a.

Stream Buffer Zones

There are no perennial or intermittent streams (channels) on or adjacent to the refuse pile or subsoil pile. Sediment and runoff and washed from the refuse pile are contained by three sedimentation sediment ponds and several catch basins. Sediment from the subsoil pile is contained by alternate sediment controls.

Sediment Control Measures

There are three sedimentation ponds on the proposed permit area and several small catch basins. On October 1, 2002, members of the review team toured the refuse pile. Mr. Johnny Pappas pointed out several catch basins that are located around the proposed permit area. The catch basins are shown on Maps 521.100a and 521.

TECHNICAL MEMO

Sedimentation ponds

Three sedimentation ponds (Ponds 5, 6, and 9) are already constructed and functioning to serve as on-site water pollution control facilities. The ponds are designed to contain the 10-year 24-hour design storm runoff event. Sediment pond details are illustrated on Maps 733.120a, 733.120f, and 733.120j. Stage-capacity curves for ponds 5, 6, and 9 are illustrated in Figures 742.221e, 742.221f, and 742.221i. The site also contains several other alternative sediment control measures such as berms, silt fences, and catch basins. The sedimentation ponds will remain in place throughout the operation period.

Siltation Structures

The applicant has identified the alternative sediment control structures (ASCAs) on Map 731.720b. Alternate sediment control areas for the Star Point Mine permit (C/007/006) were approved on September 28, 1989. Map 742.100 identifies surface roughening, benches, silt fences, sediment traps, rock check dams, water bars, berms, and straw bales to help control sediment. The structures will be used throughout the permit area to control small areas where sediment is a concern. The small catch basins inquired about in the earlier review are considered ASCAs. These areas structures will be destroyed as the refuse pile is depleted. All runoff will report to sedimentation ponds or other ASCAs.

Discharge Structures

Pond inlet and outlet design calculations are presented in Exhibits 742.221e. The calculations show the structures are designed to transmit the flows that enter and leave the ponds.

Impoundments

The sediment ponds, Pond 5, Pond 6, and Pond 9 were all constructed or approved under the Star Point permit. See Siltation Structures section above.

The designs of the sediment ponds address the following requirements:

- None of the ponds meet the requirements of an MSHA pond.
- A registered professional engineer designed all ponds.
- The Applicant did not address the stability of Pond 6 in Section 533.100-200 of the PAP and the Applicant did not state where the stability analysis for Pond 9 could be found. The Applicant did state that Pond 5 has a safety factor of 1.8 and Pond 9 has a safety factor of greater than 1.5.
- Since the ponds were approved in the Star Point permit, the Division has already reviewed the ponds' construction, including foundation preparation.

TECHNICAL MEMO

- No highwalls are associated with the ponds.
- Inspections of the pond construction were handled under the Star Point permit.
- None of the ponds will be permanent; all ponds will be removed during final reclamation.

In addition to the sedimentation ponds, several small retention ponds will trap and fully contain runoff from small areas.

Findings:

The information provided meets the minimum requirements of the Regulations for Operational Plan Hydrologic Information.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

The information provided meets the minimum requirements of the Regulations for Operation Plan Hydrologic Information.

Mining Facilities Maps

The mining facilities are shown on several maps including maps 521.100a, 521.100b, and 521.100c. A professional engineer certified all the maps.

Mine Workings Maps

Due to the nature of the project, detailed mine maps are not needed. Mining will consist of removing coal mine waste (refuse) from the refuse piles and shipping it to a cogeneration facility. What the Division is interested in is the configuration of the refuse piles before mining and the configuration after mine. The after mining configuration is shown on the reclamation maps, 542.200a and 542.200b. A professional engineer certified all the maps.

Map 521.100e, shows detailed the timing and sequence operations for the first 5 years. General timing and sequencing for the life-of-mine is also shown.

TECHNICAL MEMO

Monitoring and Sampling Location Maps

Subsidence monitoring is not applicable to this operation. No ground water monitoring will take place. Surface water monitoring other than UPDES monitoring will not be conducted because there is no surface water sources on the proposed permit area. Raptor activity will be monitored and is shown on Wildlife Habitat map #322.220a.

Findings:

The information provided meets the minimum requirements of the Regulations for Operational Plan Maps, Plans and Cross Sections of Mining Operations.

RECOMMENDATIONS:

The hydrology portion of the midterm review is complete and recommended for approval.